

REMARKS/ARGUMENTS

The Office Action rejected claims 1-25 under the judicially created doctrine of obviousness-type double patenting as unpatentable over claims 1-26 of USPN 6,386,878.

Further, claims 1026 were rejected under Section 102(b) as anticipated by Chishti et al. A terminal disclaimer is submitted herewith. Further, Applicants respectfully traverse the Section 102 rejections and submit that all claims are in condition for allowance.

The Double Patenting Rejection

A Terminal Disclaimer is submitted herewith. Withdrawal of the rejection is requested.

The Section 102 Rejection

Chishti et al. relates to a system for repositioning teeth from an initial tooth arrangement to a final tooth arrangement. On page 18, Chishti et al. discloses a saw tool where the "saw tool is used to define the individual teeth (or possibly groups of teeth) to be moved. The tool separates the scanned image into individual graphic components enabling the software to move the tooth or other component images independent of remaining portions of the model. The saw tool defines a path for cutting the graphic image by using two cubic B-spline curves lying in space, possibly constrained to parallel planes. A set of lines connects the two curves and shows the user the general cutting path. The user may edit the control points on the cubic B-splines, the thickness of the saw cut, and the number of erasers used, as described below."

Chishti goes on to state in page 19 that "Number of Erasers: A cut is comprised of multiple eraser boxes arranged next to each other as a piecewise linear approximation of the Saw Tool's curve path. The user chooses the number of erasers, which determines the sophistication of the curve created--the greater the number of segments, the more accurately the cutting will follow the curve. The number of erasers is shown graphically by the number of parallel lines connecting the two cubic B-spline curves. Once a saw cut has been completely specified the user applies the cut to the model. The cut is performed as a sequence of erasings. A preferred algorithm is set forth in FIG. 4. FIG. 4A shows a single erasing iteration of the cut as described in the algorithm."

Thus, in Chishti et al., the cut is performed as a sequence of erasings. No where in Chishti et al. does the reference show the claimed specifics of a computer-implemented method for separating a tooth from adjacent structure by defining a cutting surface; and applying the cutting surface between the tooth and the structure to separate the tooth from the structure in a single cut. Hence, Chishti et al. cannot anticipate the instant claims.

With respect to the dependent claims, Chishti et al. does not show the specifics of claim 2 the cutting surface is curved, claim 3 - the cutting surface is expressed as a function, claim 4 - the cutting surface is expressed as a spline function and a quadratic function, claim 5 - the cutting surface is expressed as a spline function and a parabolic function, claim 6 - the cutting surface is interactively adjusted, claim 7 - the interactive adjustment of the cutting surface modifies a function defining the cutting surface, claim 8 - interactively highlighting the separated portion, claim 9 - interactively highlighting the border of the separated portion, claim 10 - the cutting surface is defined by specifying a basis for the tooth, claim 11, finding a line between a tooth surface and the gingiva and applying the cutting surface to said line, claim 12 - finding a high curvature location on the tooth surface, claim 13 - fitting a spline to the line, claim 14 - the cutting surface further comprises a plurality of surfaces, claim 15 - the root of the tooth is modeled as a parabolic surface below a gingival line, claim 16 - defining an enclosing surface to enclose the crown of the tooth, claim 17 - displaying the surface specified with a plurality of nodes; adjusting one or more nodes to modify the surface; and applying the surface to separate the gingiva from the tooth, claim 18 - providing a handle to adjust each orientation of the cutting shape, claim 19 - adjusting one or more nodes further comprises moving one or more nodes, and claim 20, the cutting surface is formed using a function in a cylindrical coordinate system.

Since Chishti et al. does not show the claimed specifics, it cannot anticipate the claims. In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

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Amdt. dated April 20, 2004
Reply to Office Action of February 11, 2004

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CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,

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